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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/896,646

06/29/2001

Roy Thomas Derryberry

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26349

7590

05/20/2004

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EXAMINER

TRINH, TAN H

ART UNIT

PAPER NUMBER

2684

7

DATE MAILED: 05/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/896,646	Applicant(s) DERRYBERRY ET AL.	
	Examiner TAN TRINH	Art Unit 2684	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 June 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5 and 6 is/are rejected.
- 7) ☒ Claim(s) 2-4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Allowable Subject Matter***

1. Claims 2-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Reasons for allowance***

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 2, the prior art fails to teach, wherein the base station further comprises: at least two antennas coupled to the respective media; a transmission unit coupled to the respective antennas, wherein the transmission unit receives the data stream and modulates the carrier signal to produce the modulated carrier signal; and a calculation unit coupled to the transmission unit and the at least two antennas for receiving the feedback information from the mobile station, and modulated carrier signals being transmitted over each of the media are weighted as cited in claim 2.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa (U.S. Patent No. 6,115,614) in view of Sourour (U.S. Patent No. 6,157,820).

Regarding claim 1, Furukawa teaches a communication system (see fig. 5) comprising: at least one base station for modulating a carrier signal in response to a data stream (see fig. 5, col. 1, lines 5-14), which is to be transmitted by the base station (see col. 1, lines 26-27), in order to produce a modulated carrier signal and transmit the modulated carrier signal through at least two distinct propagation media (see fig. 13, and col. 7, lines 10-17); and at least one mobile station in communication with the base station for receiving the modulate carrier signal (see col. 3, lines 60-62), which undergoes distortion due to propagation through a medium (see col. 3, line 66-col. 4, line 6), wherein distinct pilot signals known by the mobile station (see fig. 3, col. 1, lines 26-31), are transmitted to the mobile station by the base station through each of the propagation media (see fig. 13 and fig. 3, col. 1, lines 26-31), and the mobile station receives the pilot signals as distorted pilot signals through each of the propagation media (see col. 2, lines 37-55 and col. 3, line 66-col. 4, line 11), then compares the received distorted pilot signals to determine and predict propagation measurements (see col. 7, lines 17-27), and wherein feedback information, which is determined therefrom, is transmitted from the mobile station to the base station (see col. 5, line 63-col. 6, line 6), then utilized by the base station to alter the characteristics of the modulated carrier signal prior to transmission (see col. 5, lines 22-30). Furukawa inherently teaches the demodulating the distorted signal to recover the data stream. But Furukawa fails to show the demodulating the distorted signal to recover the data stream.

However, Sourour also teaches the demodulating the distorted signal to recover the data stream (see col. 2, lines 33-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Furukawa system and by the teaching of Sourour on the

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demodulating the distorted signal thereto in order to provide system to demodulate a multi path fading channel.

4. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa (U.S. Patent No. 6,115,614) in vie of Tanay (U.S. Pub. No. 20030129987)

Regarding claim 5, Furukawa teaches a method for providing feedback from a mobile station to a base station base on predicted information (see col. 2, lines 33-60 and col. 3, lines 61-62), the method comprising: performing propagation measurements for a plurality of propagation media (see fig. 13, col. 7, lines 10-21); estimating a representative value for each of the at least two propagation media based on the propagation measurements (see fig. 13, col. 7, lines 10-33 and col. col. 5, lines 16-19); performing prediction of future propagation measurements for each of the plurality of propagation media (see fig. 13, col. 7, lines 10-33). But Furukawa fails to teach the feedback information based on prediction of future propagation measurements.

However, Tanay the feedback information based on prediction of future propagation measurements (see page 6, session [0052], lines 19-27 and session [0055], lines 7-21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Furukawa system and by the teaching of Tanay on the feedback information technique thereto in order to provide the weighting factors so that the system can adjusts the interference impact scores accordingly. (see page 6, session [0052], lines 19-27).

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Regarding claim 6, Furukawa teaches the feedback information to the base station using a feedback channel (see fig. 5, col. 22-26). (Since Furukawa teaches the feedback information to notify the base station via a control channel see fig. 5, col. 22-26, that is obvious to the feedback channel).

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gerlach (U.S. Patent No. 5,634,199) discloses method of subspace beam forming using adaptive transmitting antennas with feedback.

Ylitalo (U.S. Patent No. 6,671,499) discloses method for directing antenna beam and transceiver in a mobile communication system.

Kanaan (U.S. Patent No. 6,640,089) discloses system and method for adaptively predicting radio wave propagation.

6. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

**(703) 872-9314, (for Technology Center 2600 only)**

*Hand-delivered responses should be brought to Crystal Park II,  
2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).*

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tan Trinh whose telephone number is (703) 305-5622. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung, can be reached at (703) 308-7745.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the **Technology Center 2600 Customer Service Office** whose telephone number is **(703) 306-0377**.

Tan H. Trinh  
Art Unit 2684  
May 14, 2004

  
**NICK CORSARO**  
**PATENT EXAMINER**